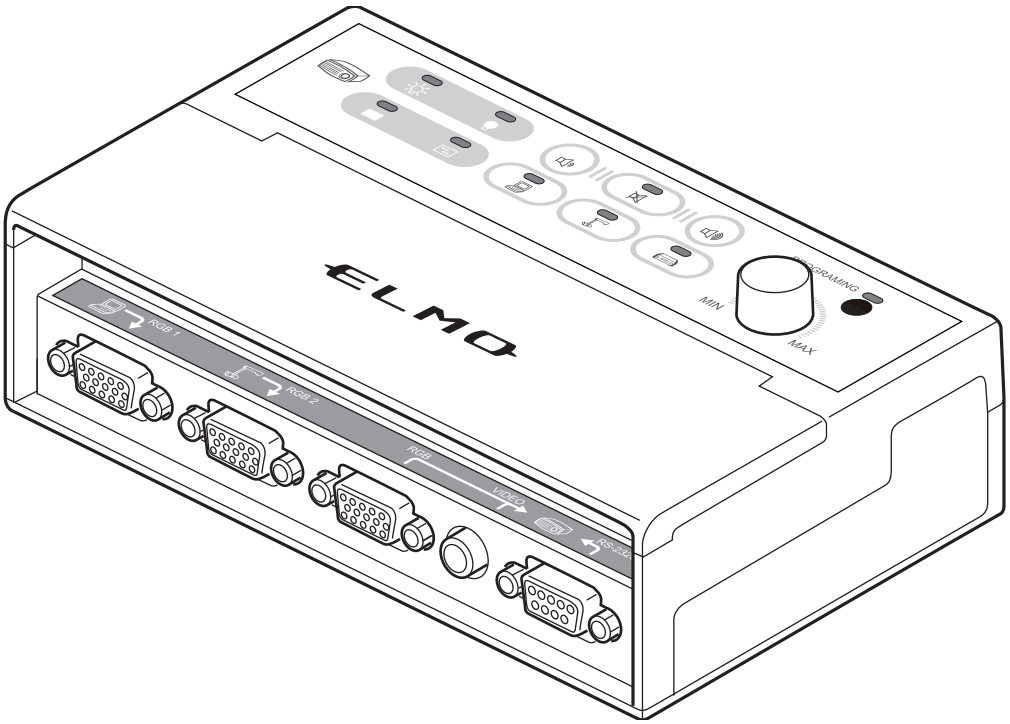
Teacher's Choice

ELMO

CRC-1

Installation Manual



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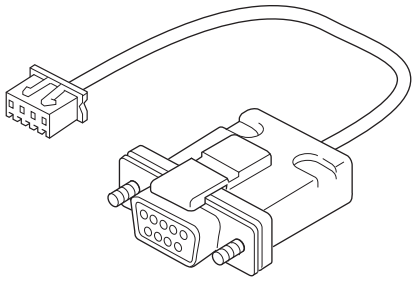
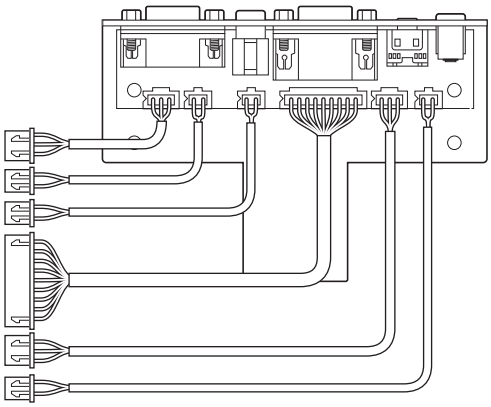
1. Usage Precautions

Read "Instruction Manual.pdf" carefully before using this option.
When using an output from the expansion board, do not use an output from the main unit.
Do not use for the objective of output distribution.

2. List of Contents



(1)



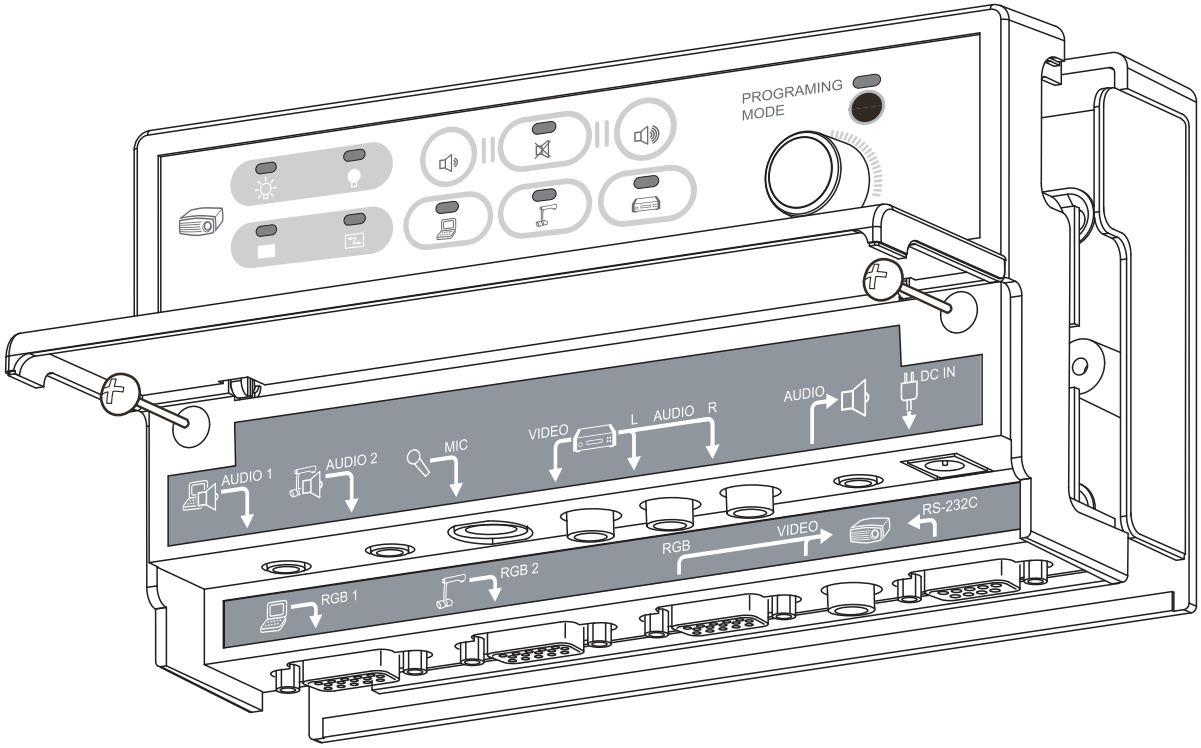
(2)

No.	Name	Quantity
(1)	Programming cable	1
(2)	Expansion board	1

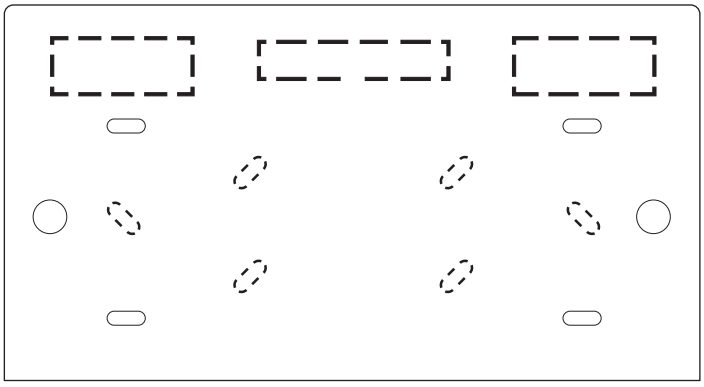
3. Installing the Expansion Board

Disassembly view

❶ **Remove the two screws under the front cover, and remove the rear cover so that the expansion board can be installed.**



❷ **Cut out the rectangle perforations on the rear cover so that the connection cables of the expansion board can be passed through. The oval perforations are for the fixing screws of the unit.**



Caution

To fix the unit with screws, cut out the oval perforated areas.

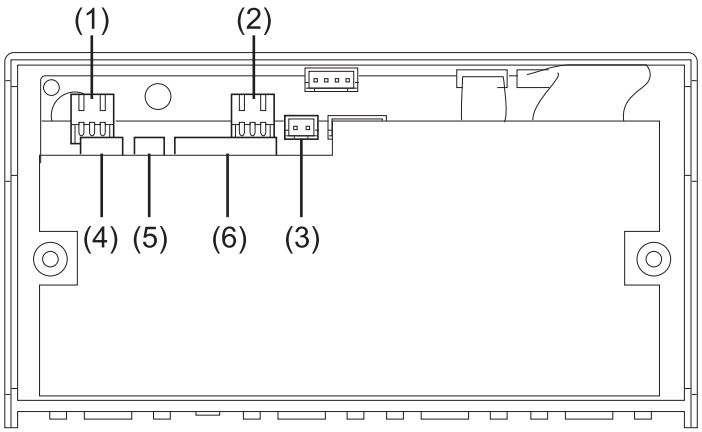
❸ **Fix in advance to the installation location.**

❹ **Connect the expansion board by referring to "Connecting the connectors and expansion board" on p.6.**

❺ **After installing the expansion board, reinstall the rear cover (removed in step (1)).**

Connecting the connectors and expansion board

The figure below shows the unit with the rear cover removed.
Connect the colored connectors of the expansion board to the unit's connectors of the same color.
Details of connectors of the expansion board are described below.



Connector	Connector color	No. of pins	Connector name	Description
(1)	White	2	Power In (DC)	Power connector
(2)	White	3	AUDIO Output	AUDIO output connector
(3)	Yellow	2	VIDEO Output	VIDEO image output connector
(4)	Red	3	RS232C Output	RS-232C control connector
(5)	Blue	2	IR Output	IR control connector
(6)	White	9	RGB Output	RGB image output connector

Caution

Some connectors are the same shape but different colors. Be sure to connect connectors of the same color. Otherwise, a malfunction may result.

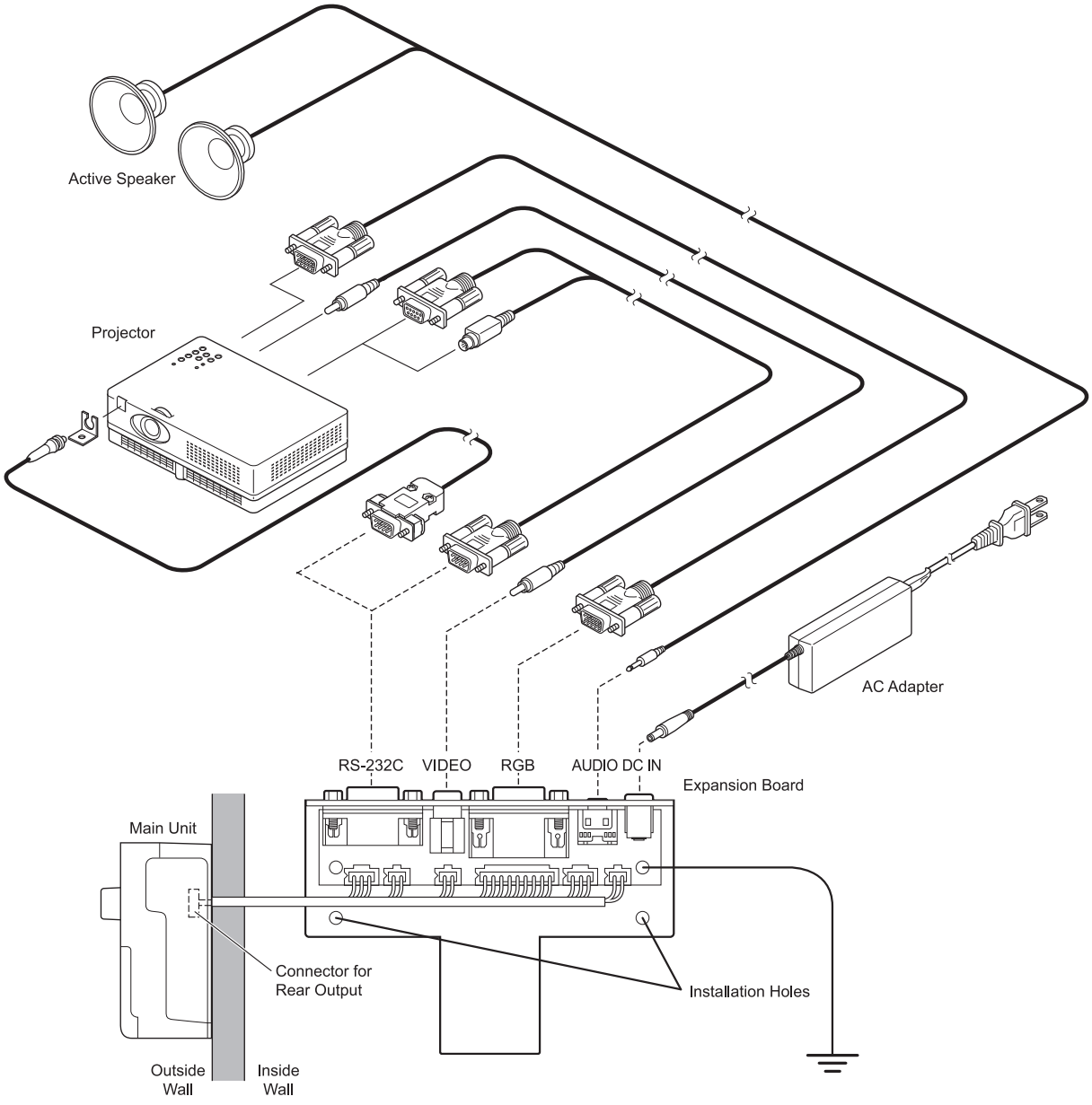
Installation method

The installation method for the expansion board is shown below.

Diameter of installation hole on expansion board: Φ4.7 mm

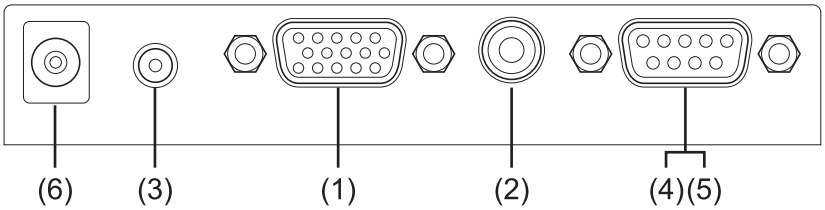
Use screws that fit this diameter to fix the expansion board to a wall or similar location.

Connect the expansion board to the ground.



Cable connections

The methods for connecting peripheral devices to the expansion board are described below. When connecting the cables, insert them fully and securely into the connectors. If a connector has fixing screws, tighten them securely.



No.	Connector	Function	Connection
(1)	RGB	RGB image output	Connects to the projector with a VGA cable
(2)	VIDEO	VIDEO image output	Connects to the projector with a video cable
(3)	AUDIO	Audio output	Connects to an external speaker with an audio cable
(4)*1	RS-232C	Control output	Connects to the control connector of the projector with the supplied RS cable
(5)*2	IR	Control output	Installs the supplied IR cable within the reception range of the projector
(6)	DC IN	Power supply	Connects the supplied AC Adapter

Caution

*1 If the connector shape on the projector side does not match, create a cable by referring to "RS-232C connector" on p.26.

*2 Use the bracket or something similar to fix the emitter of the IR cable.

4. About RS-232C

Supported models

This section shows the models that are supported by the commands registered in the unit, and the models that correspond to the model data that is supplied with the programming tool.

■ Supported models (as of February 2010)

1. Initial setting

SANYO：LP-XW200 / LP-XW250 / LP-XW300 / *LP-XW60 / *LP-XW65 / *LP-WXL46
HITACHI：CP-X308J / CP-X417J / CP-X3010J / CP-X2510J
NEC：NP600SJ / NP500WSJ / NP215J / NP210J / NP115J / NP110J
EPSON：EB-410W / EB-826W / EB-825 / EB-85
SHARP：PG-F255W / PG-F312X / PG-F212X
Canon：LV-7375 / LV-7370 / LV-7275 / LV-8300
EIKI：LC-XS25D / LC-XS30D / *LC-XB42D
InFocus：IN2100 / IN2104EP

2. Supplied data

3M：MP8745
BenQ：MP623
MITSUBISHI：LVP-WD510 / *XD250U / *XD280U
Optoma：EX525ST / EX530
Panasonic：PT-LB78V / PT-LB90 / PT-LB90NT / PT-LB75V / PT-LB51NT

For the information registered in the model data, see "Command tables" on p.24.
For the pin assignment of the projector, see "RS-232C connector" on p.26.

Caution

* These projectors use the supplied RS cable's MiniDIN8.

Using the programming tool

■Requirements for the Computer on which the programming tool is to be installed

OS: Windows 2000/XP or later

At least one free Com port that operates normally.

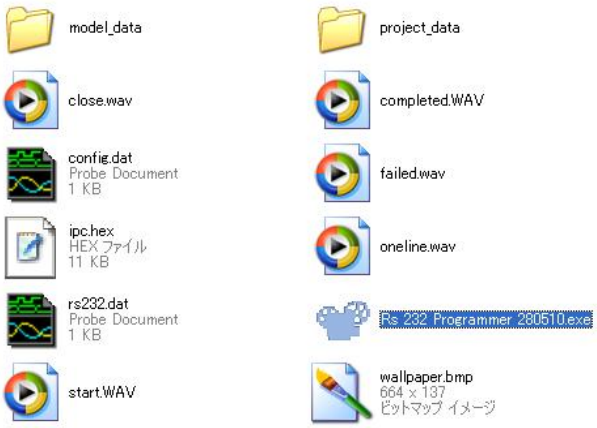
■Installation

Obtain a tool that can decompress files with the ".rar" extension. (Example: winrar, winzip)

After decompressing is complete, open the folder.

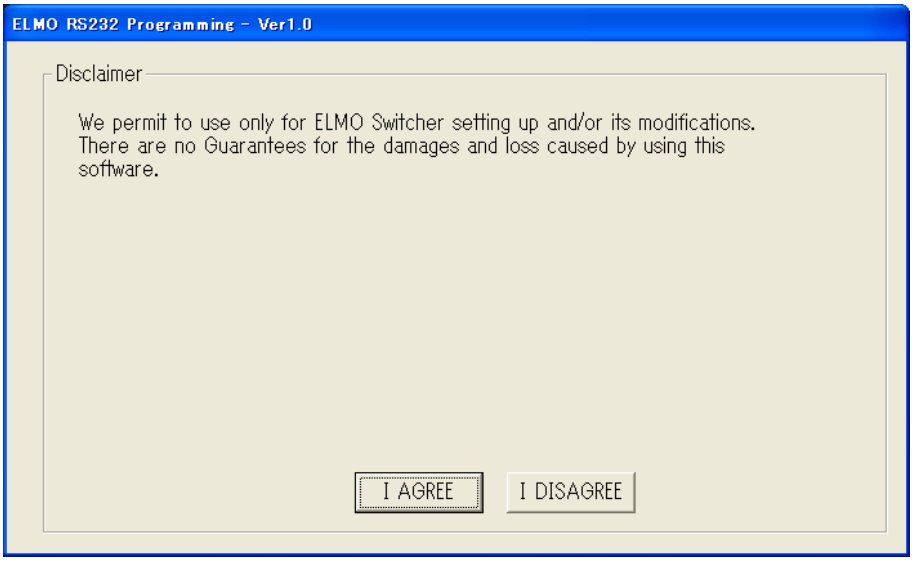
Select the executable file (Rs 232 Programmer 280510.exe) and change the RS-232C commands that are registered in the unit.

("280510" of the executable file can be changed occasionally.)



■How to use

When the tool starts, a precaution message is displayed. If you agree with the contents, select [I AGREE]. This window is only displayed the first time that the tool is started.


ELMO RS232 Programming - Ver1.0
Disclaimer
We permit to use only for ELMO Switcher setting up and/or its modifications.
There are no Guarantees for the damages and loss caused by using this software.
I AGREE
I DISAGREE

"ELMO RS232 Programming Ver1.0" is displayed in the main window.
[Project], [Model], [Settings], [About] and [Quit] are available in the menu of the main window.

1. Preparations

Select [Settings] in the menu of the programming tool and set the Com port that you want to use. The factory setting is Com1.
For details, see "5. Settings window description" on p.19.

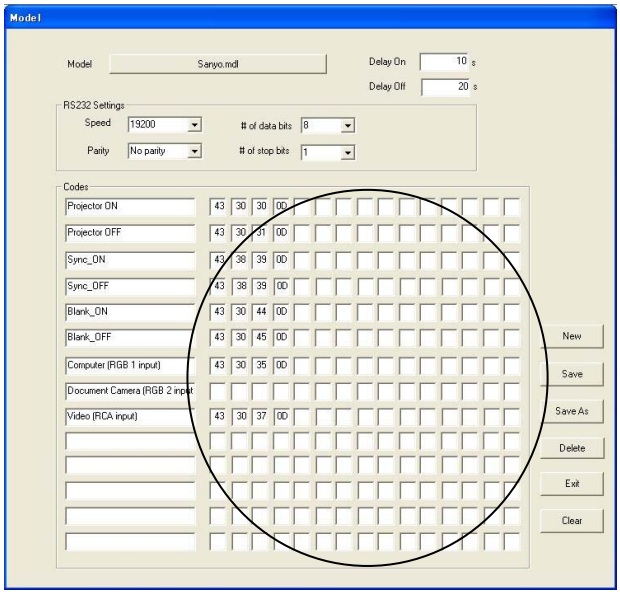
2. Operation procedure

❶ Check the projector that you want to use and the corresponding commands.

Compare with "Command tables" on p.24.

❷ Select [Model] from the menu of the programming tool. (When correcting a command table or creating a new one)

The Model window opens.
Enter the RS-232C commands for your projector and save them as a model file.
For details, see "4. Model window description" on p.17.

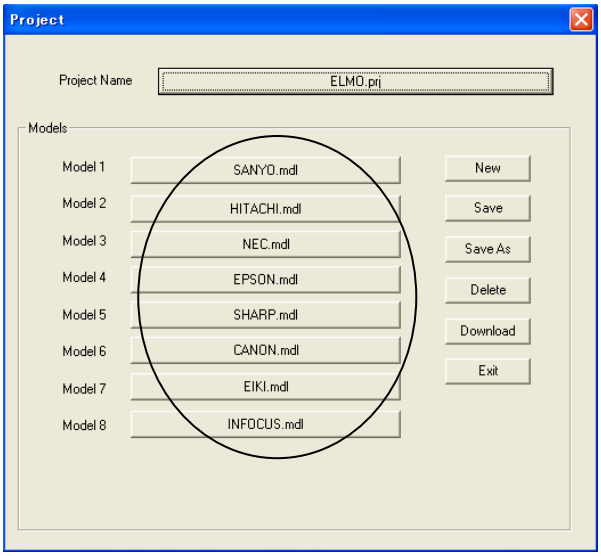


❸ Select [Project] from the menu of the programming tool.

The Project window opens.

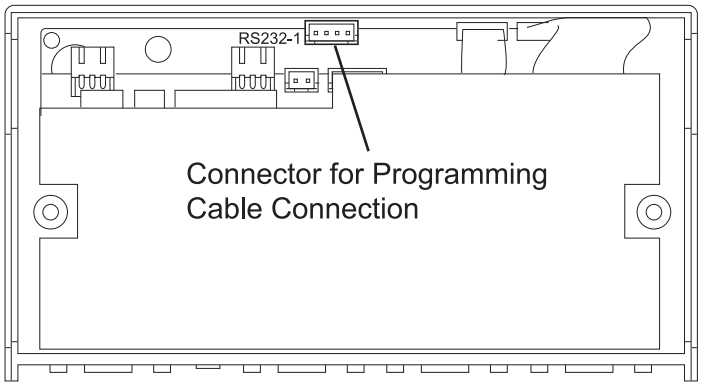
Register the model of your projector and save it as a project file.

For details, see "3. Project window description" on p.15.



❹ Remove the rear cover of the unit, and connect the unit and the Com port of the Computer on which the programming tool is installed with the programming cable.

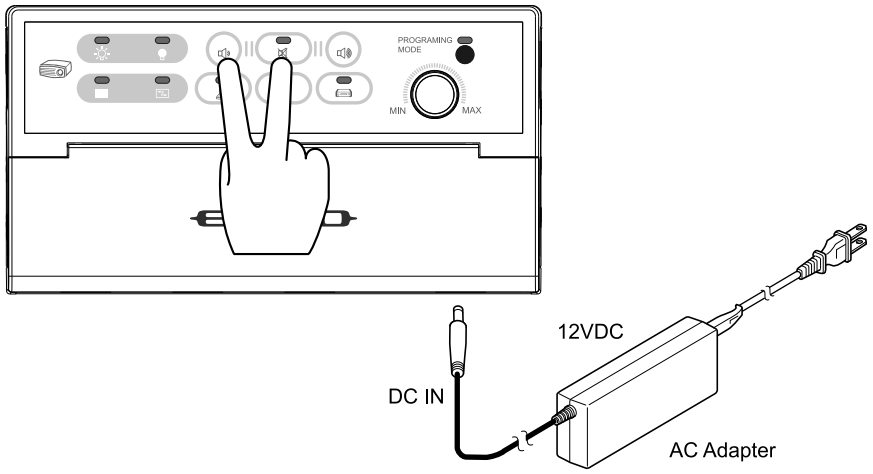
Connect the cable to the connector of the unit that is shown in the figure.



Caution	If you want to extend the programming cable, use a straight cable. For details on the pin assignment, see "Pin assignment" on p.20.

❺ While pressing and holding the unit's (Volume Down) button and (MUTE) button (3 seconds), insert the AC Adapter.

When the buttons are released, the LEDs flash. This means that the preparations for downloading the project to the unit are complete.



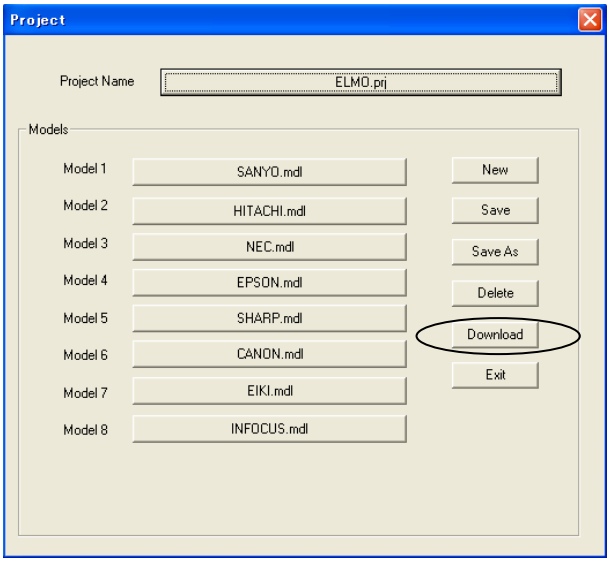
> **Caution** If you do not download within 30 seconds, the unit will return to normal operations.

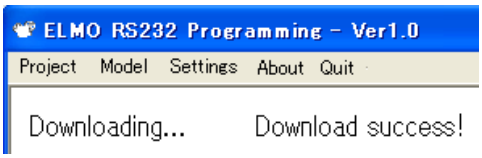
❻ In the Project window of the programming tool, select the project file that you saved.

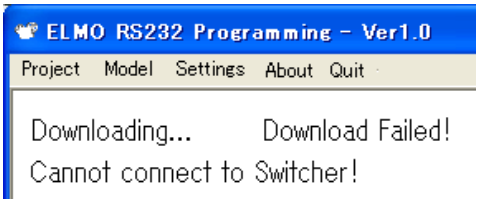
❼ Press the [Download] button.

The downloading of the project file starts.

If the downloading finishes successfully, "Download success!" is displayed on the programming tool window and the unit returns to normal operations. If it fails, "Download Failed!" is displayed. If the downloading fails, perform the procedure again from the unit download preparation stage.






ELMO RS232 Programming - Ver1.0
Project Model Settings About Quit
Downloading... Download Failed!
Cannot connect to Switcher!

Caution

If you download an edited project to the unit before you save it, the unit will not be updated with the edited information.

⑧ Disconnect the AC Adapter and programming cable from the unit.

⑨ Install the rear cover.

⑩ Select the command table that you want to use.

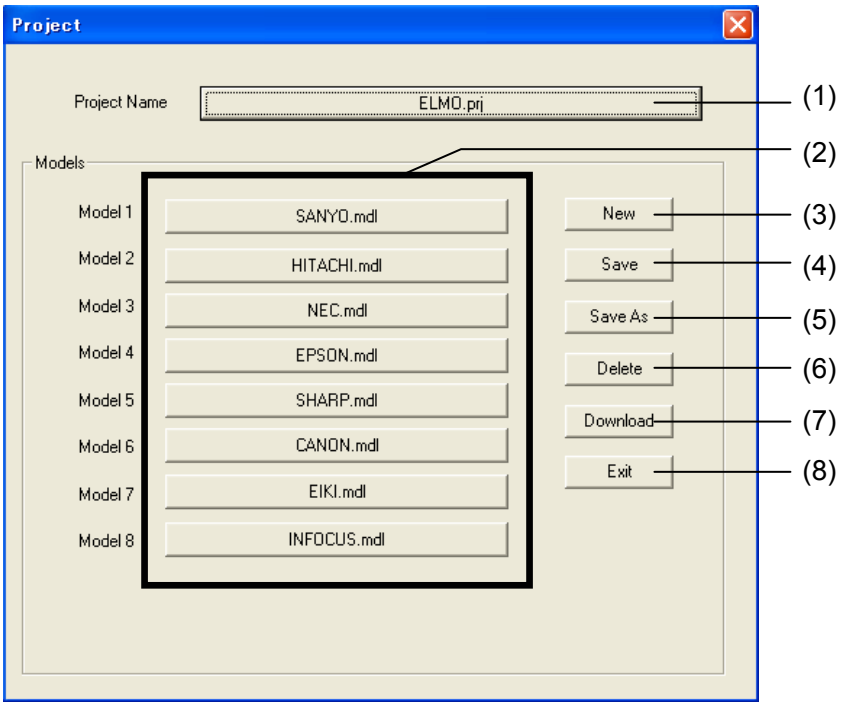
For details on the selection method, see "Controlling with RS-232C" on p.16 of the Instruction Manual.

Caution

The table that is selected before downloading is retained.

3. Project window description

When [Project] is selected from the menu, a new window opens.
Here you can edit the models that you will use in a project.
First, select [Project Name] to open an existing project.
The factory setting is "ELMO.prj", so select and open this.
Next, select a model that you want to register in the project.
Select the location that you want to register from [Model1] to [Model8].
A model list is displayed. Select the model file that you want to register from this list.
After finishing the changes, select [Save As] and save the project with a different name.



No.	Button	Description
(1)	[Project Name]	Displays a list of the existing project files. Select the project that you want to download. The selected project name is displayed on the button.
(2)	[Model]	Displays the existing files and the model files that have been created in the Model window. Select which model to register for each preset number. For details on the models, see "4. Model window description" on p.17.
(3)	[New]	Creates a new project. The Enter New Filename window is displayed. Enter a project name, select the 8 [Model] presets, and save the settings with [Save] or [Save As].
(4)	[Save]	Saves by overwriting the project file that you are currently editing.
(5)	[Save As]	Saves the project file that you are currently editing with a different name.
(6)	[Delete]	Selects and deletes an existing project file.
(7)	[Download]	Downloads the project to the unit.
(8)	[Exit]	Closes the Project window.

To create a new project, press [New].
Enter a file name, and then select and save the model files.
The file name is displayed in [Project Name].

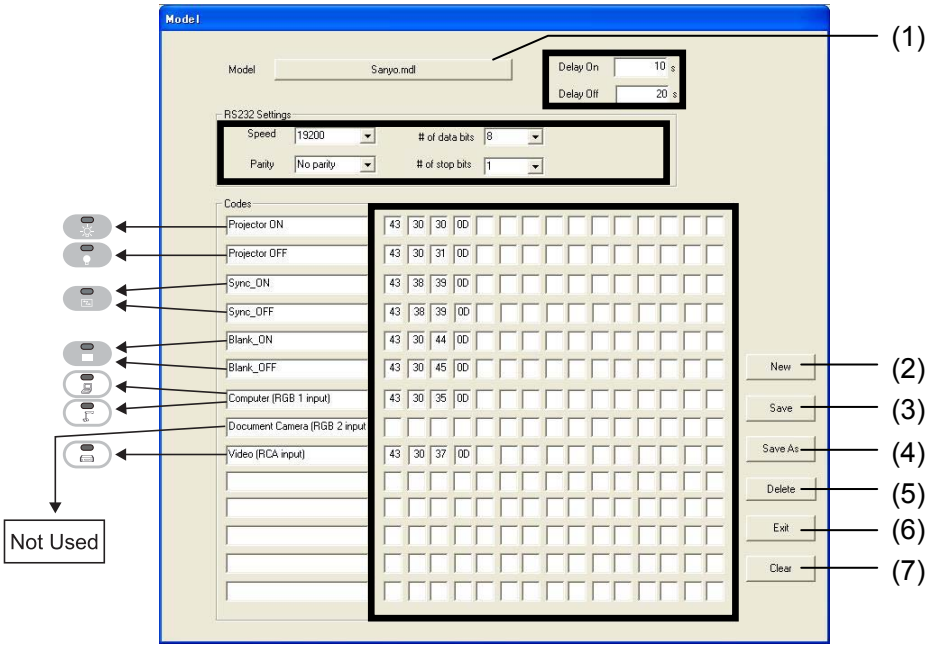
4. Model window description

When [Model] is selected from the menu, a new window opens.
Here you can edit the projector command tables.
Check and set the baud rate, parity bit, data bits and stop bits of the projector that you want to use.
Check each command and enter them in Codes as HEX codes.
After finishing the entries, select [Save] or [Save As] to save.
The saved model file is used in the Project.

■Delay On and Delay Off
Do not change this setting.

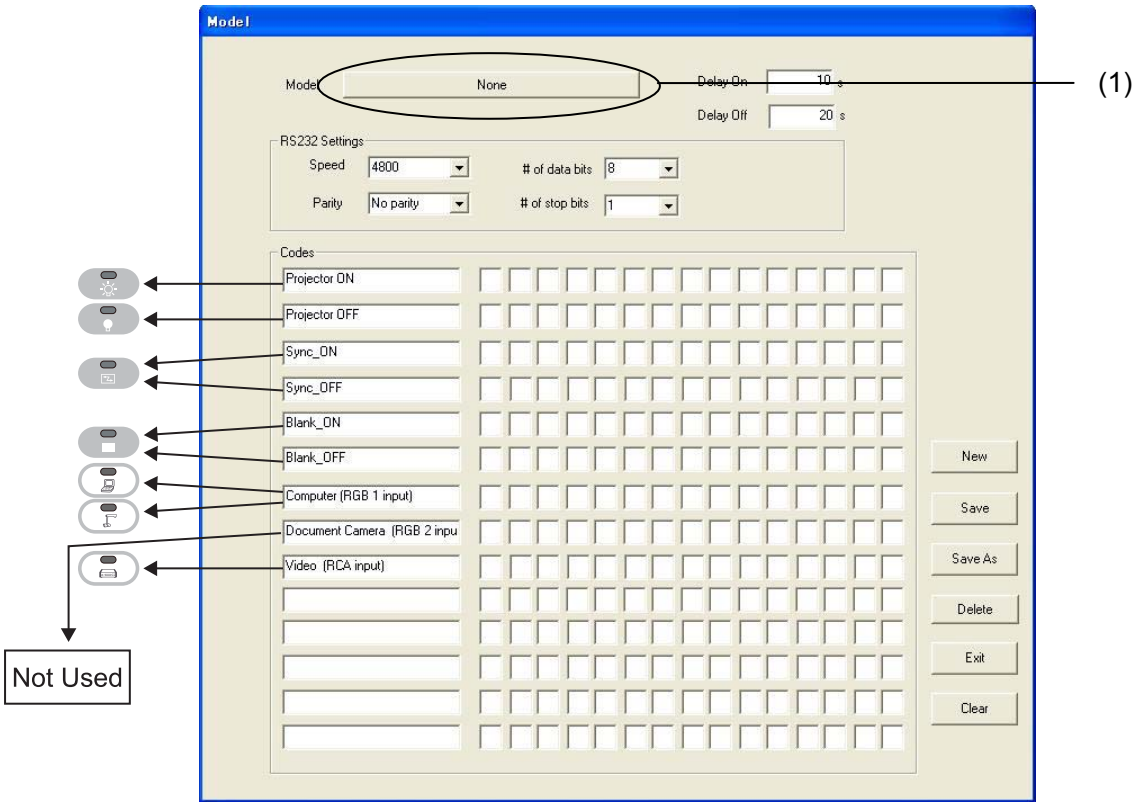
■RS232 Settings
Speed is the setting for the baud rate, Parity is for the parity bit, # of data bits is for the data bits, and # of stop bits is for the stop bits. Set as appropriate for the projector.

■Codes
Enter projector commands that are suitable for each item. Use single byte alphanumerics for the input, and enter them from the left.
If a single command in the ON/OFF format is not used for the Sync_ON and Sync_OFF inputs, register the same command for ON and OFF.
Because the same commands as Computer are used for Document Camera, do not enter anything for Document Camera. Even if a command is entered, the unit will not be updated with it.



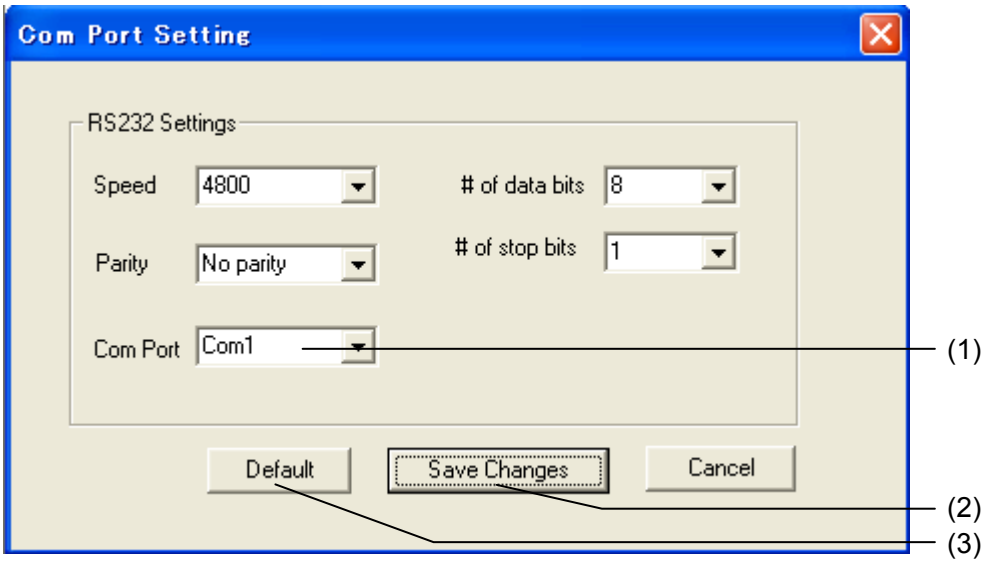
No.	Button	Description
(1)	[Model]	Displays a list of the existing model files. Select the model that you want to download. The selected model name is displayed on the button.
(2)	[New]	Creates a new model.
(3)	[Save]	Saves by overwriting the model file that you are currently editing.
(4)	[Save As]	Saves the model file that you are currently editing with a different name.
(5)	[Delete]	Selects and deletes an existing model file.
(6)	[Exit]	Closes the Model window.
(7)	[Clear]	Initializes Codes.

To register a new command table, press [New]. A new window opens. Enter a file name and press the OK button. Check that the entered file name is displayed. (1)



5. Settings window description

When [Settings] is selected from the menu, a new window opens.
Here you can perform the Com port settings.



Select a Com port of the Computer that you will use for downloading to the unit.
Select Com Port (1). After completing the settings, select [Save Changes] (2). The settings are saved.
Do not change the other settings. Doing so will prevent downloading from being performed.
When [Default] (3) is selected, the settings are reset to the factory settings.

6. About

When [About] is selected from the menu, the version of this software is displayed.

7. Quit

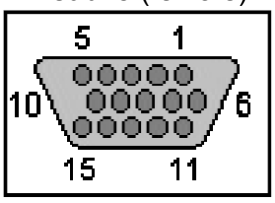
When [Quit] is selected from the menu, the programming tool closes.

5. Appendix

Pin assignment

1. RGB (Dsub15 for video)

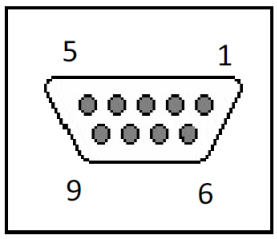
Dsub15 (female)



Pin No.	Signal	Pin No.	Signal
1	Video signal (red)	9	N.C
2	Video signal (green)	10	GND
3	Video signal (blue)	11	GND
4	N.C	12	N.C
5	GND	13	Horizontal synchronizing signal
6	GND	14	Vertical synchronizing signal
7	GND	15	N.C
8	GND		

2. RS-232C (Dsub9 for control)

Dsub9 (female)



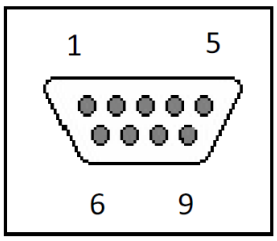
Pin No.	Signal	Pin No.	Signal
1	N.C	6	N.C
2	TxD	7	N.C
3	RxD	8	IR-
4	N.C	9	IR+
5	GND		

Caution

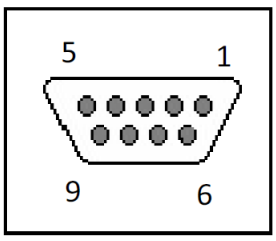
Do not connect anything to the N.C connectors.

3. Details of supplied RS cable

Dsub9 (male)



Dsub9 (female)



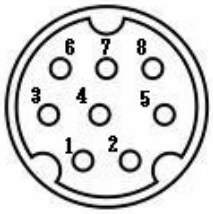
Control connector on CRC-1 side

Pin No.	Signal
1	N.C
2	TxD
3	RxD
4	N.C
5	GND
6	N.C
7	N.C
8	N.C
9	N.C

Control connector on projector side

Pin No.	Signal
1	
2	RxD
3	TxD
4	
5	GND
6	
7	
8	
9	

MiniDIN8 (male)



Control connector on projector side

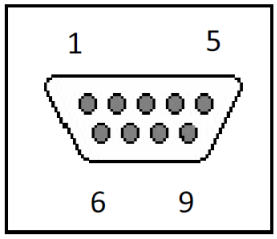
Pin No.	Signal
1	RxD
2	
3	
4	GND
5	
6	
7	
8	
9	

Caution

The supplied RS cable is a straight cable.
Do not connect anything to the N.C connectors.

4. Details of supplied IR cable

Dsub9 (male)



Control connector on CRC-1 side

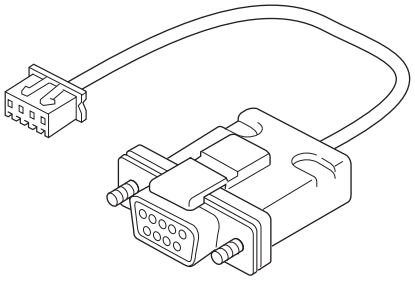
Pin No.	Signal
1	N.C
2	N.C
3	N.C
4	N.C
5	N.C
6	N.C
7	N.C
8	IR-
9	IR+

IR emitter

Caution

Fix the IR emitter near the infrared receiver of the projector with bracket or something similar.
When extending the IR cable, do not connect anything to the N.C connectors.

■Programming cable



4P connector model number: XHP-4 (made by JST)

Dsub9 (female)

Pin No.	Signal
1	N.C
2	RxD
3	TxD
4	N.C
5	GND
6	N.C
7	N.C
8	N.C
9	N.C

4P connector

Pin No.	Signal
1	GND
2	TxD
3	RxD
4	N.C

Caution

Do not connect anything to the N.C connectors.
To extend the programming cable, use a straight cable.

Command tables

This section shows the RS-232C commands that are registered in the unit and the commands in the supplied data.
When changing the contents, refer to the RS-232C commands of each projector.
The commands in the tables are displayed in HEX codes.
Computer and Document Camera use the same commands.

SANYO (Table 1)

BUTTON	COMMAND
Baud rate	19200
ON	4330300D
OFF	4330310D
SYNC ON	4338390D
SYNC OFF	4338390D
BLANK ON	4330440D
BLANK OFF	4330450D
Computer	4330350D
Document Camera	
VIDEO	4330370D

HITACHI (Table 2)

BUTTON	COMMAND
Baud rate	19200
ON	BEEF030600BAD2010000600100
OFF	BEEF0306002AD3010000600000
SYNC ON	BEEF03060091D006000A200000
SYNC OFF	BEEF03060091D006000A200000
BLANK ON	BEEF0306006BD9010020300100
BLANK OFF	BEEF030600FBD8010020300000
Computer	BEEF030600FED2010000200000
Document Camera	
VIDEO	BEEF0306006ED3010000200100

NEC (Table 3)

BUTTON	COMMAND
Baud rate	19200
ON	020000000002
OFF	020100000003
SYNC ON	020F000002050018
SYNC OFF	020F000002050018
BLANK ON	021000000012
BLANK OFF	021100000013
Computer	0203000002010109
Document Camera	
VIDEO	020300000201060E

EPSON (Table 4)

BUTTON	COMMAND
Baud rate	9600
ON	505752204F4E0D
OFF	505752204F46460D
SYNC ON	4B45592034410D
SYNC OFF	4B45592034410D
BLANK ON	4D555445204F4E0D
BLANK OFF	4D555445204F46460D
Computer	534F555243452031310D
Document Camera	
VIDEO	534F555243452034310D

SHARP (Table 5)

BUTTON	COMMAND
Baud rate	9600
ON	504F5752202020310D
OFF	504F5752202020300D
SYNC ON	41444A53202020310D
SYNC OFF	41444A53202020310D
BLANK ON	494D424B202020310D
BLANK OFF	494D424B202020300D
Computer	49524742202020310D
Document Camera	
VIDEO	49564544202020320D

Canon (Table 6)

BUTTON	COMMAND
Baud rate	19200
ON	020000000002
OFF	020100000003
SYNC ON	020F000002050018
SYNC OFF	020F000002050018
BLANK ON	021000000012
BLANK OFF	021100000013
Computer	0203000002010109
Document Camera	
VIDEO	020300000201060E

EIKI (Table 7)

BUTTON	COMMAND
Baud rate	19200
ON	4330300D
OFF	4330310D
SYNC ON	4338390D
SYNC OFF	4338390D
BLANK ON	4330440D
BLANK OFF	4330450D
Computer	4330350D
Document Camera	
VIDEO	4330370D

InFocus (Table 8)

BUTTON	COMMAND
Baud rate	115200
ON	50575231
OFF	50575230
SYNC ON	41494D
SYNC OFF	41494D
BLANK ON	424C4B31
BLANK OFF	424C4B30
Computer	44534330
Document Camera	
VIDEO	44534332

3M

BUTTON	COMMAND
Baud rate	19200
ON	31113F
OFF	31113E
SYNC ON	313C00
SYNC OFF	313C07
BLANK ON	314118
BLANK OFF	314108
Computer	312121
Document Camera	
VIDEO	312111

BenQ

BUTTON	COMMAND
Baud rate	115200
ON	0D2A706F773D6F6E230D
OFF	0D2A706F773D6F6666230D
SYNC ON	0D2A6175746F230D
SYNC OFF	0D2A6175746F230D
BLANK ON	0D2A626C616E6B3D6F6E230D
BLANK OFF	0D2A626C616E6B3D6F6666230D
Computer	0D2A736F75723D524742230D
Document Camera	
VIDEO	0D2A736F75723D766964230D

MITSUBISHI

BUTTON	COMMAND
Baud rate	9600
ON	3030210D
OFF	3030220D
SYNC ON	30307230390D
SYNC OFF	30307230390D
BLANK ON	30304D555445310D
BLANK OFF	30304D555445300D
Computer	30305F72310D
Document Camera	
VIDEO	30305F76310D

Optoma

BUTTON	COMMAND
Baud rate	9600
ON	7E3030303020310D
OFF	7E3030303020320D
SYNC ON	7E3030303120310D
SYNC OFF	7E3030303120310D
BLANK ON	7E3030303220310D
BLANK OFF	7E3030303220320D
Computer	7E3030313220350D
Document Camera	
VIDEO	7E303031322031300D

Panasonic

BUTTON	COMMAND
Baud rate	9600
ON	02504F4E03
OFF	02504F4603
SYNC ON	024F415303
SYNC OFF	024F415303
BLANK ON	024F534803
BLANK OFF	024F534803
Computer	024949533A52473103
Document Camera	
VIDEO	024949533A56494403

RS-232C connector

These are the pin assignments for the recommended projectors.
(As of February 2010, researched by ELMO)
We have made every effort to check the information here, but these values are for reference only. For the latest information, check the Instruction Manual or manufacturer of the product.

Manufacturer name	Projector	Pin type	Connector	Pin assignment															Remarks
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
3M	MP8745	Dsub15	Female						SEL0	RTS			GND			RxD	TxD		Production of this projector has been discontinued.
BenQ	MP-623	Dsub9	Female		RxD	TxD		GND		RTS	CTS								
Canon	LV-7375	Dsub9	Male		RxD	TxD		GND		RTS	CTS								Description: Use a commercially available cross cable.
	LV-7370	Dsub9	Male		RxD	TxD		GND		RTS	CTS								Description: Use a commercially available cross cable.
	LV-7275	Dsub9	Male		RxD	TxD		GND		RTS	CTS								Description: Use a commercially available cross cable.
	LV-8300	Dsub9	Male		RxD	TxD		GND		RTS	CTS								Description: Use a commercially available cross cable.
SANYO	LP-XW200	Dsub9	Male		RxD	TxD		GND		RTS	CTS								
	LP-XW250	Dsub9	Male		RxD	TxD		GND		RTS	CTS								
	LP-XW300	Dsub9	Male		RxD	TxD		GND		RTS	CTS								
	LP-XW60	MiniDIN8	-	RxD			GND	RTS/CTS	TxD										Service port
	LP-XW65	MiniDIN8	-	RxD			GND	RTS/CTS	TxD										Service port
	LP-WXL46	MiniDIN8	-	RxD			GND	RTS/CTS	TxD										Service port
EIKI	LC-XB42D	MiniDIN8	-	RxD			GND		TxD										
	LC-XS25D	Dsub9	Male		RxD	TxD		GND		RTS	CTS								
	LC-XS30D	Dsub9	Male		RxD	TxD		GND		RTS	CTS								
EPSON	EB-85	Dsub9	Male		RxD	TxD	DTR	GND	DSR										
	EB-826W	Dsub9	Male		RxD	TxD	DTR	GND	DSR										
	EB-825	Dsub9	Male		RxD	TxD	DTR	GND	DSR										
	EB-410W	Dsub9	Male		RxD	TxD	DTR	GND	DSR										
HITACHI	CP-X3010J	Dsub9	Male		RxD	TxD		GND		RTS	CTS								Description: Use a commercially available cross cable.
	CP-X2510J	Dsub9	Male		RxD	TxD		GND		RTS	CTS								Description: Use a commercially available cross cable.
	CP-X417J	Dsub9	Male		RxD	TxD		GND		RTS	CTS								Description: Use a commercially available cross cable.
	CP-X308J	Dsub9	Male		RxD	TxD		GND		RTS	CTS								Description: Use a commercially available cross cable.
Panasonic	PT-LB90	Dsub9	Female		TxD	RxD		GND		RTS	CTS								
	PT-LB90NT	Dsub9	Female		TxD	RxD		GND		RTS	CTS								
	PT-LB75V	Dsub9	Female		TxD	RxD		GND		RTS	CTS								
	PT-LB78V	Dsub9	Female		TxD	RxD		GND		RTS	CTS								
	PT-LB51NT	MiniDIN8	Female			RxD	GND	TxD											
Optoma	EX530	Dsub9	Male		RxD	TxD	DRT	GND	DSR	RTS	CTS								
	EX525ST	3PIN	-	TxD	RxD	GND													
NEC	NP600SJ	Dsub9	Male		RxD	TxD		GND		RTS	CTS								
	NP500WSJ	Dsub9	Male		RxD	TxD		GND		RTS	CTS								
	NP215J	Dsub9	Male		RxD	TxD		GND		RTS	CTS								
	NP210J	Dsub9	Male		RxD	TxD		GND		RTS	CTS								
	NP115J	Dsub9	Male		RxD	TxD		GND		RTS	CTS								
	NP110J	Dsub9	Male		RxD	TxD		GND		RTS	CTS								
SHARP	PG-F212X	Dsub9	Male		RxD	TxD		GND		RTS	CTS								Use the conversion cable that is supplied with the projector. (MiniDIN9 -> Dsub9)
	PG-F312X	Dsub9	Male		RxD	TxD		GND		RTS	CTS								Use the conversion cable that is supplied with the projector. (MiniDIN9 -> Dsub9)
	PG-F255W	Dsub9	Male		RxD	TxD		GND		RTS	CTS								Use the conversion cable that is supplied with the projector. (MiniDIN9 -> Dsub9)
MITSUBISHI	XD280U	MiniDIN8	-	RxD			GND			TxD									
	XD250U	MiniDIN8	-	RxD			GND			TxD									
	LVP-WD510	Dsub9	Male		RxD	TxD		GND											Description: Use a commercially available cross cable.
InFocus	IN2100	Dsub9	Male		RxD	TxD	DTR	GND	DSR	RTS	CTS								
	IN2104EP	Dsub9	Male		RxD	TxD	DTR	GND	DSR	RTS	CTS								

Use the supplied RS cable.
Create and use a special cable.

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